

ABSTRACT OF THE DISCLOSURE

Liquid chromatography based on the difference of two or more kinds of separation modes, (e.g., chemical or physical properties of analytes) may improve separations when samples contain complex mixtures. In this invention, the analytes separated on the 1st analysis system (consisting of the 1st column and the 1st mobile phase) will be trapped onto individual trapping columns. Then the trapped analytes will be loaded onto the 2nd analysis system consisting of the 2nd column and the 2nd mobile phase. This invention has the trapping and loading mechanism consisting of a combination of switching valves necessary to produce the serial separations. Also this invention has the capability to affect online desalting when it is needed depending on a detector or the nature of the analyte mixture.